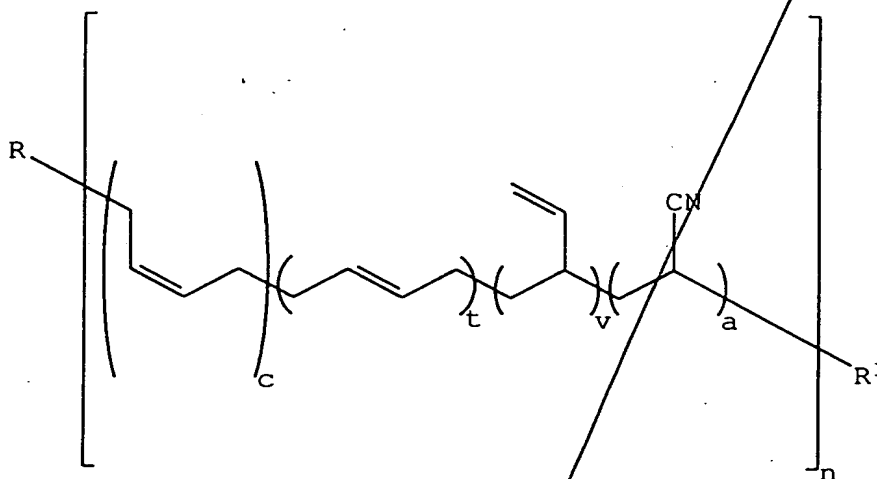


What is Claimed Is:

Sub A' 1. A process for preparing an hydroxyl-functionalized material, said process comprising the step of:

reacting as reactants (a) a carboxylic acid-functionalized material represented by:



wherein R and R<sup>1</sup> may be the same or different and may be selected from COOH or CAA<sup>1</sup>-X-COOH, A and A<sup>1</sup> may be the same or different and may be selected from hydrogen, halogen, cyano or linear or branched alkyl groups having from 1 to about 5 carbon atoms and X may be selected from linear or branched alkyl groups having from 2 to about 5 carbon atoms, c+t+v+a=1, and n is an integer in the range of from about 5 to about 750, with (b) an hydroxyalkylating reagent selected from the group consisting of carbocyclic carbonates and carbocyclic sulfites, in the presence of (c) a phase transfer catalyst, under conditions sufficient to form the hydroxyl-functionalized material.

2. The process according to Claim 1, wherein said carboxylic acid-functionalized material is selected from the group consisting of the following carboxylic acid-functionalized polymers: polyethylene, polybutadiene, polyisoprene, poly(butadiene-co-acrylonitrile), poly(isobutylene), poly-(butadiene-co-styrene),

poly(butadiene-co-acrylonitrile-co-acrylic acid), poly(ethyl acrylate), poly(ethyl acrylate-co-n-butyl acrylate), poly(n-butyl acrylate-co-acrylonitrile), poly(butyl acrylate-co-styrene), and combinations thereof.

3. The process according to Claim 1, wherein said hydroxyalkylating reactant is a member selected from the group consisting of carbocyclic carbonate, carbocyclic sulfites and combinations thereof.

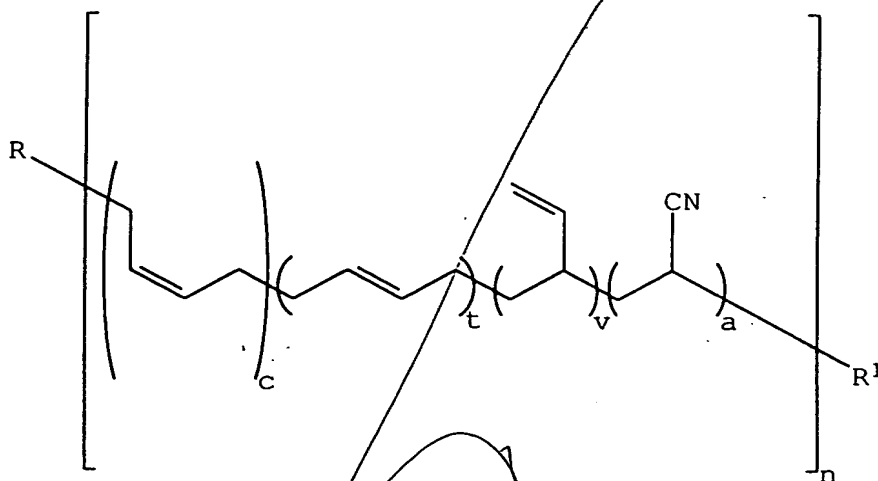
4. The process according to Claim 3, wherein said carbocyclic carbonate is a member selected from the group consisting of ethylene carbonate, 1,3-propylene carbonate, 2-methyl-1,2-ethylene carbonate, 3-methyl-1,3-propylene carbonate, 1,2-dimethyl methylene carbonate, 2,2-dimethyl butylene carbonate and combinations thereof.

5. The process according to Claim 3, wherein said carbocyclic carbonate is ethylene carbonate.

6. The process according to Claim 3, wherein said carbocyclic sulfite is a member selected from the group consisting of ethylene sulfite, propylene sulfites and combinations thereof.

7. The process according to Claim 3, wherein said carbocyclic sulfite is ethylene sulfite.

8. The process according to Claim 1, wherein said hydroxyl-functionalized material is represented by:



wherein R and R' may be the same or different and may be selected from COO-X'-OH or CAA'-X-COO-X'-COOH, wherein A and A' may be the same or different and may be selected from hydrogen, halogen, cyano or linear or branched alkyl groups having from 1 to about 5 carbon atoms, and X and X' may be the same or different and may be selected from linear or branched alkyl groups having from 2 to about 5 carbon atoms,  $c+t+v+a=1$  and n is an integer in the range of from about 5 to about 750.

*Sub A<sup>2</sup>* 9. The process according to Claim 1, wherein said hydroxyl-functionalized material is selected from the group consisting of the following hydroxyl-functionalized polymers: polyethylene, polybutadiene, polyisoprene, poly(isobutylene), poly(butadiene-co-acrylonitrile), poly(butadiene-co-styrene), poly(butadiene-co-acrylonitrile-co-acrylic acid), poly(ethyl acrylate), poly(ethyl acrylate-co-n-butyl acrylate), poly(n-butyl acrylate-co-acrylonitrile), poly(butyl acrylate-co-styrene), and combinations thereof.

10. The process according to Claim 1, further comprising the step of providing an amphoteric treating agent in an amount sufficient to cause the

hydroxyl-functionalized material to separate from the reactants which remain and/or any by-products thereof.

11. The process according to Claim 10, wherein the amphoteric treating agent is a member selected from the group consisting of silicated magnesium oxide, magnesium oxide, magnesium hydroxide, calcium hydroxide, barium oxide, barium hydroxide and combinations thereof.

12. The process according to Claim 1, wherein the phase transfer catalyst is a member selected from the group consisting of quaternary ammonium halides, phosphonium halides, sulfonium halides, crown ethers, calixarenes and combinations thereof.

13. The process according to Claim 1, wherein the phase transfer catalyst is a member selected from the group consisting of tetrabutyl ammonium iodide, tetraethyl ammonium iodide, benzyl trimethyl ammonium chloride and ethyl triphenylphosphonium bromide.

*Sub A3* 14. The process according to Claim 1, wherein the amount of hydroxyalkylating reagent is 3 to 10 parts by weight of the carboxylic acid-functionalized material.

15. The process according to Claim 1, wherein the carboxylic acid-functionalized material is a member selected from the group consisting of carboxylic acid-functionalized polybutadiene and carboxylic acid-functionalized poly(butadiene-co-acrylonitrile).

16. Hydroxyl-functionalized materials prepared by the process according to Claim 1.

17. An adhesive, coating or sealant composition having improved toughness and elongation properties and curable through a gap of more than 40 mils, said composition comprising (a) a reaction product of (i) the

hydroxyl-functionalized material according to Claim 1, and (ii) a molar excess of a reaction product of a molar excess of an aromatic or cycloaliphatic polyisocyanate and a compound selected from the group consisting of an aromatic or cycloaliphatic polyol, the reaction product of (i) and (ii) subsequently being reacted with a molar excess of a compound selected from the group consisting of a hydroxyalkyl acrylate, a hydroxyalkyl methacrylate, an amino alkyl acrylate, an amino alkyl methacrylate and combinations thereof; and (b) an initiator selected from the group consisting of free radical initiators and photo-initiators.

18. The composition according to Claim 17, wherein the polyisocyanate is a member selected from the group consisting of toluene diisocyanate and 4,4'-diisocyanate diphenyl methane; and the reaction product in (a) is an isocyanate-terminated hydrogenated bisphenol-A and toluene diisocyanate.

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